

I. HEDGING

Bank profits stem directly from the earnings spread between the expense associated with liabilities and the return on assets. Management of this spread, particularly in an environment of rapidly changing interest rates, involves minimizing undesired maturity mismatches and consequent interest rate movement risks. The classical example of a mismatch is long term real estate loans offset by short term certificates of deposit. Even in the best managed institutions, it is not possible nor always desirable to attain a perfect match. There is almost always a lag between relative interest rate movements associated with liabilities, particularly deposits, and those associated with assets. Even when short term certificates of deposit are offset on the asset side by short term or variable rate loans, the spread cannot be perfectly maintained. Particularly in periods of rapid change, the interest cost of liabilities tends to be more volatile than the rate of return on assets. It is this fundamental lag or temporary imbalance that lends itself to hedging through the use of financial futures and forward contracts.

For a banking institution to enter into a proper hedge transaction on an informed basis, it must know what fundamental imbalance exists in its balance sheet. It must be remembered that these lags or temporary mismatches, in addition to being unavoidable, are sometimes deliberately undertaken by banks. This occurs as the bank attempts to position itself to take advantage of changing interest rate structures. Such strategies if excessive are speculative, but if moderate and undertaken to avoid deterioration in the bank's spread may be justified. Banks are particularly vulnerable to interest rate movements that are contrary to their expectations when they are in the midst of repositioning activity. Adjustments cannot be made instantly and may require several weeks to months to achieve. During these periods of repositioning, hedges are sometimes undertaken. For example, if a bank believes overall interest rates will be declining, there will be an inclination to move into assets with longer maturities. To make certain that interest rate projections are correct, purchases of assets such as bonds with more distant maturities might be "temporarily" hedged through the sale of futures contracts, thereby affording management an opportunity to reconsider its projections in light of subsequent events and reverse its committed

posture with minimum loss. It is a fundamental requirement to consider the overall matching of the maturity of assets and liabilities, together with the sources and uses of the bank's funds, in order to determine; first, whether it is proper for a bank to engage in a hedging transaction, and second, to what degree such hedges should be undertaken. Without an understanding of the degree to which the overall asset and liability maturities of an institution are matched or consciously mismatched, it is impossible, inappropriate, and indeed dangerous for that institution to engage in hedging transactions. Hedges undertaken in such an environment may not in fact minimize the risk to the bank of changing interest rates, but increase that risk.

The FDIC has adopted a Statement of Policy (refer to the Prentice Hall volumes) concerning participation in the futures and forward contracts markets cautioning that banks engaging in such contracts should only do so in accordance with safe and sound banking practices.

II. FINANCIAL DERIVATIVES

The Market

Financial derivatives, also commonly known and referred to as derivative instruments, derivative products, financial contracts, and synthetics, are the most rapidly growing part of the world financial markets. Broadly defined, a financial derivative is a contract whose value depends on, or derives from, the value of an underlying asset, reference rate, or index.

Financial derivatives are contracts which are principally designed to transfer price, interest rate and other market risks, without involving the actual holding or conveyance of balance sheet assets or liabilities. These contracts or instruments are generally stated or recognized in terms of a "notional value", an amount which is not carried on the balance sheet. Hence the common reference to "off"-balance sheet instruments. The actual market value usually is a fractional portion of the notional value.

Besides being the fastest developing element of the global marketplace, financial derivatives are arguably the least well-understood. The complexity of these instruments is largely the result of the pricing mechanisms and option features, which involve extensive mathematical modeling and value

calculation formulas.

The participants in this market are widely viewed as comprising two groups -- dealers and end-users. Dealers are primarily large commercial banks and securities firms which engage in transactions with customers and other market participants, seeking to profit by maintaining a bid offer spread on a generally balanced portfolio. Dealers are thought of as the "providers" of the various derivative products.

Corporations, governmental entities, institutional investors, and financial institutions are at present the principal end-users of financial derivatives. For the most part, end-users utilize financial derivatives to manage various market risks, such as interest rate or currency exposure, inherent in existing balance sheet positions or business activities. However, the taking of an open (unhedged or unmatched) position in a commodity or financial instrument, in the anticipation that future price movements will be advantageous, is another use for derivatives and is commonly referred to as speculating.

A single market participant can simultaneously engage in all three activities, often segregating derivatives activity into dealing, hedging and trading portfolios. While insured financial institutions fall into both groups of participants and engage in all three activities, the majority of state nonmember institutions are end-users of these instruments.

The Products

Financial derivatives can be generally divided into categories based on the nature of the underlying assets or indices that determine the contract's value. Further, they are either "exchange traded" or "over-the-counter" (OTC) products, and generally fall into one of four categories:

- interest rate contracts;
- foreign exchange contracts;
- equity contracts;
- commodity contracts.

Although derivatives are becoming increasingly complex (for example contracts combining more than one of the four categories, multiple indices and characteristics of several different products), all synthetics can be viewed as an assemblage of forward agreements and options. Analysis of pricing and risk

can then be fundamentally evaluated in terms of the structure of anticipated cash flows, and expectations of future interest rates and economic conditions.

Forward contracts are customized instruments with terms and conditions that can be tailored to fit the particular business, financial position, or risk management objectives of any participant or counterparty. The amount, underlying instrument, delivery locations, dates, and credit terms, can all be unique to the individual contract. Forward contracts create two-sided credit risk, with exposure to default held by the counterparty expecting to receive net funds; the "in-the-money" position. During the life of the contract, market conditions can result in the favorable "in-the-money" position alternating between the two counterparties.

The other derivatives building block is the option contract. In exchange for payment of a premium, an option contract gives the buyer (holder) the right but not the obligation to buy or sell an underlying instrument at a predetermined "strike price", either during or at the conclusion of the life of the option period. The holder benefits from favorable movement in the price of the underlying instrument, but unlike a forward contract, losses are limited to the premium paid for the option. However, the seller, or writer, of an option, in exchange for receipt of this premium, accepts the obligation and the commensurate open exposure to the risk that market movements will dictate exercise of the option at the most disadvantageous price.

The combination of forward delivery or performance, and the right or obligation to exercise or perform, provides the basis for a wide variety of contracts. Exchange traded products are those contracts which have been standardized to allow participants to trade them under uniform rules in a secondary market, while OTC instruments retain the unique features of tailored contracts.

The Seven Risks

There are seven fundamental risks inherent in financial derivative instruments and off-balance sheet activities. Most of these are present in varying degrees in more traditional financial institution products and activities, and can largely be assessed and evaluated in similar fashion. The complexity of financial derivatives is largely due to the manner in which these risks are combined, the difficulty in determining market values and the speed with which external market forces can

affect the activity.

1. Market Risk

Market risk is broadly defined as the risk that a derivative instrument will lose value due to a change in the price of an underlying instrument, an index of financial instruments, or various interest rates. The three principal market risks are price risk, interest rate risk and basis risk.

Price risk is generally a function of the price of the underlying instrument. Changes in the price of the underlying instrument affect the value of the associated financial contract, varying in extent with the characteristics of the instrument and the derivative. Interest rate risk is caused by changes in the level of current or expected future market interest rates, and the relationship between these rates over future periods (the yield curve). Basis risk results from the use of two or more instruments with different rate indices, which change at different speeds or are subject to different market forces.

2. Counterparty Credit Risk

This is the risk of default by a counterparty unwilling or unable to meet the terms of the contract, exposing the holder of the in-the-money position to the cost of replacing the favorable contract under present market conditions. The amount of credit risk is the cost of replacement by an identical contract, also known as the current exposure of the contract, and is established by assessing the current market value of the contract as opposed to the value at inception.

Exchange traded instruments (futures, options, and options on futures) are marked to market, either at the end of each trading day or on an intra-day basis, by the exchange clearinghouse. Changes in the value of positions are received from or paid by the participants on a daily basis. All participants are required to post a performance bond or collateral with the exchange, to minimize credit risk, in the event of failure of the exchange.

3. Liquidity Risk

Product liquidity risk exists to the degree that an instrument cannot be obtained, closed out or disposed of rapidly at, or very close to, economic value. The liquidity of financial derivative markets change gradually over time as products or usage evolves, but can also fluctuate rapidly in times of market stress. In some markets liquidity can vary over the course of the

day.

For most derivative instruments, established secondary markets exist with a large number of participating counterparties, ensuring liquidity under normal market conditions. However, the use of uniquely tailored or more thinly traded products raises the possibility that a sufficient number of contracts or willing counterparties may become unavailable in periods of market stress.

Termination and close out are collateral requirement provisions contained in many derivative contracts, particularly OTC instruments. In addition to product liquidity risk, these provisions may require an institution to meet unexpected cash flow or asset pledging requirements. While the individual amounts required will normally be only a fraction of the notional value of these contracts, a large number of contracts with the same counterparty or subject to the same market risks may expose an institution to substantial collateral demands.

4. Operating Risk

Operating risk is the possibility that inadequate internal controls or procedures, human error, system failure, or fraud, can result in unexpected losses. These losses can result from credit exposures in excess of established ability to confirm performance limits, unanticipated open positions, or fraud.

5. Legal Risk

Legal risk is the possibility that a court ruling or litigation will preclude contractual performance.

6. Settlement Risk

Settlement risk, which typically last for only a short time, is the exposure to loss of delivering funds or assets before receiving the proceeds specified in the contract, and the counterparty is subsequently either unable or unwilling to perform. Settlement risk may exist as a result of the time differences between foreign counterparties, when delivery is not synchronized with payment, or when the method of payment creates a delay in receiving funds.

7. Aggregation or Inter-connection Risk

This risk is a result of the manner in which positions in, or values of, any one derivative instrument are directly or indirectly tied to a number of other positions on or off the balance sheet. These inter-connections,

sometimes referred to as "multi-legged positions", frequently involve both cross-border and cross-market links and a wide range of individual financial instruments.

This inter-connection or aggregation of risks gives rise to the possibility of systemic disruptions. Systemic disruptions are that a single market event (the failure of a firm, disruption of a market, or collapse of a payment system) will, as a result of the widespread use of derivatives, cause the subsequent failure, disruption, or collapse of other firms, markets or payment systems.

Supervisory Policy

The FDIC recognizes that the appropriate use of derivatives can confer substantial benefits to institutions, end-users, dealers and position takers. It is not the intent to discourage the taking of reasonable risks by appropriately capitalized, well-managed institutions, but to ensure that acceptable capital levels, suitable expertise, and sufficient management controls are maintained for such activities. In determining the appropriate level of capital, examiners should base their assessment not just on the current and potential exposure presented by the activity, but also on the institution's overall risk profile and financial condition. For the purposes of establishing management capabilities, examiners should look beyond the level of technical expertise in the specific activities, and review management's appetite for incremental risk and historical performance in measuring, monitoring and managing risk in other more traditional financial activities. The presence of acceptable internal controls, appropriate to the degree of institution involvement in off-balance sheet activities, may provide the focus and determine the extent of any examination of this area.

Although the focus of this discussion is on end-users of financial derivatives, this supervisory guidance is largely applicable to all insured institutions. While the degree of exposure may be more acute at institutions with larger dealer portfolios or proprietary trading positions, the risks presented by involvement in financial derivatives are similar, irrespective of the purpose. The complexity of measurement, reporting and analysis required of institutions will be different depending on the size, composition, volume and use of these instruments.

In evaluating whether an institution's involvement in off-balance sheet activities represents a safety and soundness concern, examiners should consider not

just the volume of activity, but the risks presented by the individual instrument or portfolio of instruments comprising the activity. These activities should generally be viewed in conjunction with the on-balance sheet portfolios and operations of the institution. Determination of the replacement cost, or mark to market value of the derivative instruments, will be important in quantifying the potential risks presented by these activities.

The manner in which an institution is using financial derivatives should be considered when establishing the risk of involvement. Institutions which make markets in these instruments will have a large number of outstanding contracts and will reflect commensurately large notional amounts. However, most of these contracts will have been offset with other financial derivatives which will show opposite mark to market values. The net positive or negative mark to market value of a dealer portfolio will normally reflect a relatively balanced position. The bulk of financial derivatives activity takes place at a comparatively few dealer institutions. However, the majority of participants in these markets neither make markets in these instruments or trade for their own account, but use these products to reduce or manage risks indigenous to their existing portfolios, overall balance sheet position or business activities. Institutions which utilize derivatives in this manner may show significant notional amounts of outstanding contracts and may even have unbalanced mark to market positions. However, the derivatives portfolios of these institutions should be analyzed in the context of the related asset or liability positions.

Examiners should identify and review in detail institutions which appear to be speculating in derivatives contracts. An on-site examination should provide access to current and detailed financial reports. Discussions with and reviews of management personnel will generally reveal the overall philosophy and operational approach taken by the institution with respect to derivative instruments. In this manner, positions which are merely coincidentally or superficially offset can be revealed as speculative, or apparently unmatched positions can be justified as moderating rather than accentuating risk. Derivative activity should not be viewed as simply a separate activity, but rather as an integral portion of the institution's business philosophy and approach. Similarly, the willingness and ability of management to assume risks in these activities can often be assessed on the basis of the supervision and control exercised in other areas of the institution.

While examiners are likely to find well-established systems and controls, appropriate management supervision, acceptable technical knowledge, and specific audit programs in the more established dealer institutions, these safeguards may be present to only a lesser extent in end-users or in entities comparatively new to the activity. The responsibilities of the on-site examination should be substantially greater in those instances where management oversight and audit programs are less well-developed. This may include a detailed review of operating procedures and credit and transaction documentation to assist in the assessment of the institution's exposure to the seven risk factors.

The FDIC believes that it is important for each member of an institution's board of directors, as well as its executive management, to be fully cognizant of the existing and proposed strategy for involvement of their institution in financial derivatives. They should also be knowledgeable of the extent of current activities, and the potential risks to which the institution is exposed. While it is not essential that individual members of the board or executive management possess a detailed understanding of this highly complex area, it is incumbent on these individuals to retain personnel with the necessary technical knowledge and experience suitable for the envisioned level of involvement, and to exercise appropriate supervision over their activities. Each of the directors and executive management, while not expected to personally have significant technical knowledge of these instruments and markets, is nevertheless expected to be fully aware of the risks of such activities. It is reasonable to expect that the familiarity of the directors and executive officers with these instruments would naturally increase commensurate with the institution's degree of involvement.

In the review of the institution's board of directors' minutes, examiners should see evidence of a full discussion of the overall business strategy, costs, benefits, and especially of the risks of the institution's planned or ongoing involvement in derivatives activities. Appropriate management personnel should have prepared an executive document in language suitable for the technical knowledge and awareness of the full board. This document should detail the exact nature of the planned involvement and the levels of risk that can be incurred. Risk parameters should be expressed in terms of most likely and worst case scenarios, with specific board and management approvals for these levels clearly enumerated. Analysis and determination of risks should be in the context of the institution's individual risk profile.

Evaluation of the Seven Fundamental Risk Factors

Irrespective of any degree of responsibility, legally or otherwise assumed by, or required of, the counterparty, it remains incumbent on the end-users of derivative instruments to fully understand the nature and risks of these contracts and to determine the suitability and appropriateness of their involvement in the transaction.

Evaluation of the seven fundamental risk factors should provide the examiner with the framework for discussing the institution's risk profile with management. Although quantification of these risks, especially market risk, is likely to yield a range of potential results predicated on the specific scenario assumptions, this will indicate management's appetite for risk and provide insight into the institution's overall risk profile.

Market Risk

Central to the examination of market risk is the determination of how well an institution limits, measures, and monitors its off-balance sheet risk positions. Market risk need not be the result of large or complex trades; market risk is more a function of the relative concentration of activity in instruments which will react in the same manner to a single market event. The type of derivative is also a factor. A relatively small, unhedged position in an extremely volatile instrument may be more dangerous from a market risk perspective than a larger position with less inherent price, interest rate or basis risk. In a review of the established risk management guidelines, examiners should consider the volume and type of off-balance sheet activity in the context of the institution's overall business strategy, financial position and existing risk profile.

Examiners should seek to determine whether the institution's risk management system provides for accurate and timely measurement of the value of the derivatives portfolio. The institution's records should also include appropriate technical reports stated in clear, concise language consistent with the board of director's level of knowledge. All institutions that are significant users of derivatives should be found to employ a management reporting system that can provide valuations for their entire portfolio, and that compares the outstanding positions against the risk and position limits established by management. Examiner analysis of more sophisticated risk management systems should include an assessment of scenario stress testing (i.e., the quantification of

specific adverse market movements on the derivatives portfolio and contingency plans for management response).

The determination of market values for derivatives instruments is complicated by the individuality of OTC contracts and the continual price changes of exchange traded products. Examiners should expect the institution to have price data for financial derivatives available for review, with the frequency and detail of this information determined by the use of the instruments and the level of activity. End-users of only a limited number of contracts may appropriately rely entirely on periodic prices provided by the dealer counterparty. However, dealers, more active participants, and those trading for their own account, will need to have internal pricing systems or some other methodology for obtaining current market values for the instruments in their portfolios.

Examiners should determine that institutions are performing these periodic revaluations as often as necessary to determine whether the instruments or portfolio is behaving as expected. Institutions using financial derivatives solely for risk management purposes may be able to rely on broker provided mark-to-market values. However, institutions with substantial portfolios, or that are trading the instruments to take advantage of short-term price movements, should have the ability to update the mark-to-market positions on a frequent basis. For these institutions, it may be possible to establish market price averages on a daily or even intra-day basis. If historical value changes in the derivative instruments is maintained by the institution, examiners may be able to verify the accuracy of current price, interest rate and basis risk assumptions.

Limits on the acceptable level of price risk to be assumed by the institution will generally be in terms of risk limits, or loss limits, measuring the amount of potential exposure and mark-to-market losses for a given period, respectively. These limits should, at a minimum, address (1) the maximum positions in terms of specific markets, market segments, contract length, and specific individual authority; and (2) the types of risk exposure (i.e., basis risk, yield curve risk, and total amount of dollars at risk).

Counterparty Credit Risk

The examination of credit risk in financial derivatives should view contract counterparties in the same manner as other extensions of credit. Individual credit limits, collateral requirements, credit enhancements,

guarantees, and payment terms for each counterparty should be subject to the same underwriting criteria used to establish other forms of credit. Institutions should be discouraged from relying exclusively on third party credit ratings for determining creditworthiness. The determination of credit quality with respect to derivatives trading should be the responsibility of experienced underwriting professionals who are independent of the derivatives trading or hedging function.

The fundamental difference in the underwriting of derivatives counterparties and other forms of credit extension is in the determination of the amount at risk and the variation of this amount over the life of the contract. The replacement cost of the contract is the amount at risk, but may well be lowest at inception and will increase over time. The determination of appropriate credit line and concentration limits will have to reflect the potential for changes in the replacement cost and should allow for periodic reassessment, as appropriate. Examiners should consider the potential for rapid changes in the financial condition of derivative market participants when assessing an institution's periodic review of counterparty credit lines. As the financial condition of a market participant deteriorates, participation of that entity in the derivatives markets will be sharply curtailed, which may serve to hasten the erosion in credit quality and financial capacity.

To limit credit risk exposure, institutions will generally seek to enter into contracts with strong counterparties, make use of bilateral close-out master netting agreements, limit credit concentrations, and establish various credit enhancements including the use of collateral, third party guarantees, and early termination provisions. Examiners should determine the nature and extent of these attempts to limit credit risk, including, as necessary, the review of policies, documents, and collateral agreements. Derivatives' collateral requirements are typically more fluid than in a traditional credit environment. They are predicated on which party is in-the-money and require frequent recalculation. Documentation exceptions and the identification and follow-up of counterparty defaults are critical elements in assessing the credit quality of an institution's derivatives portfolio.

Liquidity Risk

The examination of liquidity considerations would normally include a review of the institution's assessment of their own derivatives portfolio to determine if there is adequate liquidity during periods

of market stress or in the event of early termination of contracts by their counterparties. Examiners should question the use of thinly traded instruments and/or the potential need for large volumes of these instruments in times of market stress. Consideration should also be given to the impact of the derivatives portfolio on overall liquidity or funding requirements of the institution. Collateral requirements or other contractually mandated credit enhancements may be triggered by various factors including rating downgrades, financial condition, or regulatory action, and can result in unanticipated funding needs. Examiners should expect that prior to the use of a new product, or entry into a new market, an institution would normally investigate the market, the number of market makers (i.e. how many sources of pricing exist), the volume of transactions in the market, and the overall liquidity of the specific contract.

Operating Risk

There are four key elements for the evaluation of operating risk: (1) the scope and findings of internal audit, (2) the quality of operating controls and procedures, (3) the suitability of personnel and acceptability of staffing levels, and (4) the sufficiency of documentation and records.

The adequacy of an institution's internal audit program regarding derivatives should be assessed to determine the scope of an examination. The extent and detail of an examination can be tailored to take advantage of the strengths of an institution's internal audit program, especially with regard to confirmation tests and documentation requirements. Conversely, a weak internal audit program will not only be subject to criticism, but may well necessitate expanded examiner review.

Although personnel needs for derivatives activities vary substantially with the volume and complexity of transactions, examiners should interview management to determine that the level of technical expertise and adequate staffing exists, commensurate with the degree of involvement and the inherent risks. An institution's recordkeeping system needs will vary with the type and volume of activity. Examiners should assess the recordation of transactions, accuracy of position valuations, and the execution and documentation of derivatives contracts. The issues of timely documentation, trade confirmation, contract maintenance, document protection, and the formal process of identification and resolution of documentation exceptions, should be part of the examination process. Examiners should emphasize

the importance of strict internal controls over derivatives activities, including appropriate segregation of duties between operational, exposure reporting, and risk monitoring functions.

Legal Risk and Settlement Risk

Significant losses have resulted from legal risk, primarily related to unauthorized transactions and netting agreements. Institutions have suffered losses by entering into derivatives contracts with a counterparty that lacked legal authorization to engage in derivatives activities. Netting agreements (agreements used to combine multiple positions between counterparties) have not always been honored in all jurisdictions or in bankruptcy proceedings.

Master netting agreements are widely viewed to have a high degree of enforceability in the United States, however, the enforceability of netting agreements with foreign counterparties varies from country to country. Legal opinions should address the enforceability of netting provisions when dealing with foreign counterparties or when using unconventional netting agreements with any counterparty. If a netting agreement is ruled unenforceable, an institution's credit risk exposure to the related counterparty is likely to be significantly higher than anticipated.

Examiners should determine that a testing process is in place for legal review of all derivatives transactions. This process should ensure that individuals who enter into derivatives transactions for entities such as municipalities, mutual funds, pension funds and corporations are specifically authorized to do so and that master netting agreements have been individually reviewed to determine that they are relevant in all appropriate jurisdictions. While the use of standard netting agreements may simplify the process, their utilization does not entirely obviate the need for legal review of individual contracts. The lack of coordination between payment and delivery, which gives rise to settlement risk, also can be addressed by carefully constructed contractual agreements.

Aggregation or Inter-Connection Risk

Inter-connection risk and the possibility of systemic disruptions are likely to be of significant concern only in very large institutions or those with substantial involvement in financial derivatives activities. Aggregation risk typically exists when an instrument consists of several different components. For instance, a capped Euro note paying German LIBOR

which is swapped into U.S. dollars, entails derivative positions in swaps, currencies and options. While examiners should be aware of the problems facing such institutions in dealing with a failure event, the primary protection for these institutions will remain the expertise of institution personnel and sophistication of management information systems. For institutions with substantial derivative involvement or exposure, the speed with which such disruptions could theoretically spread may well require significantly more sophisticated systems and operating procedures, to provide essential information on an immediate or real time basis.

Examination Report Treatment

Consideration and discussion of these issues in the context of interest rate risk will generally be appropriate, but other risk factors may be addressed in the relevant sections of the report (i.e., earnings; management; and liquidity). If off-balance sheet activities present a material impact on the institution with regards to use of resources or potential for incremental risk, the scope, extent and management strategy may warrant specific discussion on the Examination Comments and Conclusions page of the Report of Examination.

III. INTEREST RATE SWAPS

Introduction to Interest Rate Swaps

An interest rate swap is an agreement between two parties to exchange interest rate payments which are based on a principal or notional amount. The notional amount is only used to calculate payments and is not exchanged. In a basic swap, the fixed payor makes fixed payments and receives floating payments. The floating payor makes floating payments and receives fixed payments. Fixed payments are usually determined as the sum of the yield-to-maturity on a Treasury security with a maturity equal to the swap maturity, plus a negotiated spread above that yield referred to as the swap spread. Floating payments are based on an underlying index rate (i.e., 6-month LIBOR) which resets periodically corresponding to the repricing interval of the

floating rate index. For greater efficiency, fixed and floating payments may be netted at the payment date, and one payment is made by the party owing the balance. Typically swap maturities range between 2 to 10 years.

Variations from the basic swap have emerged as the swap market has grown, including variations to the floating and fixed payments as well as the notional amount. The most common floating rate variations are basis swaps which involve the exchange of two floating payments based on different underlying index rates. Sometimes these swaps require one or both swap participants to pay a spread over the floating rate. Some common fixed rate variations are step up and step down swaps. The name is derived from the fixed payment which rises (steps up) or falls (steps down) over the life of the swap. Variations of notional value include amortizing and accreting swaps. Swaps whose notional value amortizes over the term of the swap are referred to as amortizing swaps; when the notional value increases over the term of the swap, the swap is referred to as an accreting swap. Swap agreements where the notional value amortization is tied to a schedule based on the level of a specific index are referred to as indexed principal swaps. One type of indexed principal swap is a mortgage swap. Its notional value amortizes according to the prepayment rate of a benchmark mortgage. Yet another swap variation is a forward swap which is like a forward interest rate contract in that the start date of the swap is deferred to an agreed upon date in the future.

Swap Derivatives

As varying types of institutions became active in the swap market, swap derivatives emerged to meet the needs of these new participants. These structures usually involve some type of option which is either an option on the swap, a swaption, or an option embedded within the swap, a cancelable swap. The former is an option to enter into a swap, and the latter is an option to cancel a swap. There are two types of swaptions, call and put swaptions. Call swaptions give the purchaser the option to enter into a swap to receive fixed and pay floating payments at some time in the future. A put swaption differs in that it gives the purchaser the option to pay fixed rate and receive floating rate payments. Cancelable swaps contain embedded options and can be either callable or puttable swaps. The callable swap gives the fixed

rate payer the right to terminate the swap while a putable swap gives the fixed rate receiver the right to terminate the swap.

Uses of Interest Rate Swaps

The primary use of a swap is to modify the cash flow stream of an asset or liability. For example, a financial institution may want to better match the cash flow streams of its fixed rate assets and floating rate liabilities. To accomplish this, it may enter into a swap where it makes fixed payments, related to the rate on its fixed rate assets, and receives floating payments to better match the cash flow characteristics of its liabilities. In this way, the institution has converted a floating rate liability into a fixed rate liability. If the institution's floating rate liabilities move in concert with the floating rate payments it is receiving on the swap, the institution has successfully protected its net interest margin from rising and falling rates. Swaps can also be used to modify the duration of an institution's assets and liabilities.

Frequently, large commercial banks and investment banks act as intermediaries to swap transactions. By guaranteeing the performance of both sides of the swap and handling the transfer of the net swap payment, these institutions can earn fee income. Some institutions enter into swap agreements with the intention of speculating on interest rates. Generally, this activity is not considered consistent with safe and sound practices and should not be conducted by most banks. However, when a sophisticated institution can demonstrate that it has sufficient capital, proper internal controls and expertise in the area, an exception may be made.

Risks of Interest Rate Swaps

Although typically used to reduce interest rate risk, swaps can become a source of interest rate risk if not properly managed and monitored. For example, if a swap is intended to hedge a particular position, the term of the swap should coincide with the maturity of the hedged position. If the hedged position is called away or liquidated for some reason, the swap may become a source of interest rate risk. Another form of interest rate risk associated with hedging is basis risk. It is the risk that the floating rate index on the swap and the floating rate on the hedged asset or liability may diverge instead of moving together. Poor

correlation between these floating rates could cause a loss of earnings and a reduction in the net interest margin if not properly managed.

Because the interest rate swap market is an unregulated, over-the-counter market, counterparty creditworthiness is an important consideration when entering into swap agreements. Credit exposure, however, is limited to the replacement cost of the swap because the notional value of the swap is not exchanged. Swap counterparties can require credit enhancements to a swap agreement in order to reduce their credit exposure. When the credit rating of a swap counterparty is substandard, a bank can require the counterparty to post collateral or mark the swap to market.

Swaps may also pose liquidity risk. The cost and ability to terminate or enter into a swap agreement is liquidity risk. For example, suppose an institution entered into a swap in order to hedge a callable position, and subsequently that position was called before the swap matured. The liquidity of the swap market will determine if the institution can terminate the swap agreement and at what cost. Greater market liquidity affords institutions increased flexibility in managing their swap positions.

Examination Procedures

Prior to engaging in swap agreements, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in swap agreements, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals who demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound

manner. Prior to entering into and throughout the term of any swap agreement, a determination should be made that the particular activity is consistent with the overall asset/liability position of the institution. For most banks, swap agreements should be utilized to reduce interest rate exposure, however, exceptions may be made for more sophisticated institutions which have sufficient experience, capacity and controls to properly handle the use of these contracts for other purposes, namely, trading and acting as an intermediary. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all swap positions and how these reported positions will affect the bank's interest rate exposure and earnings performance. A bank should also monitor and report on the credit risk associated with these agreements. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all on- and off-balance sheet categories to determine each counterparty's overall credit exposure. Depending on the level and the counterparty's financial condition, the bank should contemplate the need for a valuation reserve or possible deletion from the approved counterparty list.

Speculating with interest rate swaps is generally not permitted. However, if the institution has adequate capital, sufficient internal controls and management expertise, this type of activity may be acceptable. When a bank has undertaken a swap arrangement for speculative purposes or as an intermediary, its swap position should be marked to market on a regular basis. Speculation with swaps

is only appropriate in banks with a sophisticated trading function.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the

bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should, at a minimum, include type, notional amount, floating rate index, fixed rate, and maturity of the swap. Also, the bank should report swap positions in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of a swap agreement with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review contracts.

IV. INTEREST RATE CAPS AND FLOORS

Introduction

Interest rate caps are over-the-counter (OTC) instruments which give the purchaser, for a premium, the right to receive a payment if a specified index rate (i.e., LIBOR) rises above a designated strike rate. The frequency with which the index rate is compared with the strike rate is known as the settlement frequency and usually occurs monthly, quarterly or semiannually. Payments are based on the principal amount or notional amount of the cap, although no exchange of principal takes place. Interest rate floors are similar to caps, however, except that they allow the purchaser to receive a payment when the specified index rate falls below the strike rate. Typical cap and floor maturities range between 3 months and 12 years.

A cap can be thought of as a series of put options on the price of a short-term security, and a floor as a series of call options on a short-term security. As such, option terminology is used to describe the value of a cap or floor. A cap or floor with a strike rate equal to the underlying index rate is considered at-the-money. A cap is in-the-money when the index rate exceeds the strike rate, and a floor is in-the-money when the

index rate declines below the strike rate. When the relationship between the strike rate and index rate is reversed, the cap and floor are out-of-the-money. The delta of a cap or floor measures the relative degree to which it is in or out of the money.

Uses of Interest Rate Caps and Floors

Interest rate caps can be referred to as interest rate ceilings because they allow the purchaser to cap the contractual rate associated with a floating rate liability. For example, when rates rise, an institution which has purchased a cap to hedge a liability will receive payments, assuming rates rise above the strike rate, which will offset the increase in interest expense on the hedged liability. Interest rate floors allow the purchaser to protect the rate of return on a floating rate asset. Other strategies combine caps and floors. One such strategy involves purchasing a cap and selling a floor, which is referred to as a collar. A collar allows an institution to protect against rising rates while reducing the net cost of the cap by the floor premium received. An interest rate corridor is another strategy an institution may use to protect against rising rates while reducing its net premium cost. This is effectuated by purchasing a cap at a lower strike rate and selling a cap at a higher strike rate.

Banks can also speculate on interest rates by purchasing or selling caps and floors. Speculation in most cases is not an acceptable strategy although there are some cases -- where the bank has adequate capital, internal controls and management expertise -- in which exceptions may be made. Exceptions of this nature are consistent with a sophisticated trading function.

Some financial institutions act as intermediaries in cap and floor agreements. A cap or floor may be sold and an offsetting cap or floor may be purchased in order to earn fee income.

Risks of Interest Rate Caps and Floors

Interest rate caps and floors are over-the-counter instruments and therefore are subject to counterparty credit exposure. When a counterparty to a cap or floor which was part of a hedging strategy defaults, the institution may become subject to interest rate risk and possible earnings losses. To reduce these risks, some institutions only deal with highly rated institutions

or require that some type of collateral is pledged when the financial condition of the counterparty is substandard. This pledged collateral serves to defray any losses in the event of counterparty default.

Although these instruments may be used effectively to reduce interest rate risk, they may also expose an institution to increased interest rate risk. For example, an institution using an interest rate corridor strategy to protect its interest expense from rising rates may wind up with increased interest expense if interest rates rise above the strike rate on the sold cap.

Because these instruments are traded in an over-the-counter market, liquidity risk may be inherent in these instruments. Also, price information may not be as readily available to participants as it would be in a centralized market.

Examination Procedures

Prior to engaging in caps and floors, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in caps and floors, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals who demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to entering into and throughout the term of any cap or floor agreement, a determination should be made that the particular activity is consistent with the overall asset/liability position of the institution. For most banks, cap and floor agreements should be utilized to reduce interest rate exposure, however, exceptions may be made for more sophisticated institutions which have sufficient experience, capacity and controls

to properly handle the use of these agreements for other purposes, namely, trading and acting as an intermediary. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all cap and floor agreements and how these reported positions will affect the bank's interest rate exposure and earnings performance.

A bank should also monitor and report on the credit risk associated with its cap and floor agreements. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all on- and off-balance sheet categories to determine each counterparty's overall credit exposure level. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for a valuation reserve or possible deletion from the approved counterparty list.

Speculation with caps and floors is generally not permitted. However, if the institution has adequate capital, sufficient internal controls and management expertise, an exception may be made.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should, at a minimum, include type (cap or floor), nature of position (purchased/sold), notional amount, underlying index rate and agreed upon source, strike rate, settlement frequency and reset dates. The bank should report cap and floor positions in the

Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of caps and floors with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review master agreements between counterparties.

V. INTEREST RATE FORWARD AND FUTURES CONTRACTS

Introduction

An interest rate futures contract is an agreement to take or make delivery or cash settle a specified position at a specified price at a future date. A long position refers to a purchased futures contract while a short position refers to the sale of a futures contract. Future contracts are standardized contracts which trade on organized exchanges and settle through a clearing corporation. The clearing corporation stands between the buyer and the seller, thereby reducing some counterparty credit risk. Futures prices are determined competitively via an open outcry auction system. Some of the most widely traded futures contracts are 3-month Eurodollar, 1-month LIBOR, Treasury bills, 30-day interest rate, and the 2-, 5-, 10- and 30-year Treasury notes and bond contracts.

For many longer term futures contracts, the price is quoted on a hypothetical security, and parameters are set which specify the maturity range of Treasuries which are acceptable for delivery on the contract. For example, the 30-year Treasury bond futures contract calls for the delivery of an 8%, 20-year Treasury bond. Any Treasury bond with at least 15 years to maturity or first call qualifies for delivery. An adjustment (called a conversion factor) is made which accounts for the difference in coupon and/or maturity. It effectively converts all bonds which

fall within the delivery parameters to an 8%, 20-year Treasury bond.

Because futures contracts are traded on organized exchanges, price, volume and open interest are readily available on pricing systems. Also, the *Wall Street Journal* contains the previous day's closing price for most interest rate futures contracts as well as the volume and open interest. Open interest is the number of contracts that are outstanding and have not been offset, delivered or exercised. Open interest and volume information give participants an indication of the liquidity in each particular contract.

The Commodity Futures Trading Commission (CFTC) is the Federal regulatory agency which regulates the futures and options exchanges. Also providing regulatory oversight is the Futures Industry Association, which is the futures industry's self regulatory body. The clearing corporations, regulatory oversight and margin accounts serve to reduce much of the credit risk associated with the futures market. A margin account is an initial cash or collateral deposit which serves to guarantee the fulfillment of contractual obligations. As the futures price fluctuates, creating a profit or loss on a position, the margin account is debited or credited accordingly. If the account falls below a prescribed level, additional funds must be added to the account referred to as variation margin.

Commonly, delivery of the underlying instrument is not taken. Instead the futures position is closed out by purchasing or selling the offsetting futures contract. A few contracts, such as those based on short term interest rates, are cash settled and no delivery of a financial instrument takes place. The difference between the market (cash) price of the underlying instrument and the futures price is the basis. At expiration, the cash and futures price will be equal. This is referred to as convergence of cash and futures prices.

Many financial instruments which banks own do not have corresponding futures contracts. In this situation, a bank would determine which futures contract's price sensitivity most closely tracked that of the financial instrument. This is known as cross hedging. An adjustment is calculated, known as the hedge ratio, which accounts for the differing price volatility between the hedged position and hedging instrument. The hedge ratio aids in determining how many futures contracts

should be purchased or sold in relation to the hedged instrument. It is calculated by dividing the relative price volatility of the hedged position by that of the futures contract. An adjustment may also need to be made to account for the changing yield spread relationship between the two instruments.

Over-the-Counter (OTC) Interest Rate Forward Contracts

Interest rate forward contracts are conceptually the same as interest rate futures; however, a forward contract is not standardized or traded on an exchange. Instead, these securities trade in the over-the-counter (OTC) market which is primarily dominated by large investment banks and commercial banks. Transactions are negotiated in terms of contract specifications and price. Forward contracts are usually held to term when delivery of the underlying instrument is made or taken. Counterparty creditworthiness is a major consideration in transacting forward contracts. No regulatory agency or exchange controls are present in this market, therefore participation in this market requires diligent analysis and monitoring of credit exposure.

Margin accounts are not a part of the forward market process; however, market makers may require collateral in some form to ensure the fulfillment of the obligation. This collateral account may be structured similar to a margin account in that more collateral could be secured depending on the performance of the forward position.

Uses of Futures and Forwards

Financial institutions use forward and futures contracts for a number of reasons. One reason is to hedge the interest rate risk involved with anticipatory positions. For example, suppose an institution, believing that interest rates are favorable, decides to borrow \$5 million of 3-month CDs with a rate tied to LIBOR; however, the borrowing can not be completed immediately because the bank must attract these funds. Estimated time to complete the \$5 million borrowing is 3 months. The institution can sell a 3-month Eurodollar futures contract and lock in current rates. As depositors begin moving money into these 3-month CDs the institution can buy back a proportional amount of Eurodollar futures

contracts until the entire amount of Eurodollar futures contracts are offset, leaving the 3-month CDs on the bank's books.

An institution can hedge the interest rate risk of an asset or liability or group of assets or liabilities with futures and forward contracts. For example, if an institution wanted to protect against rising interest expense on a particular liability, it would sell an appropriate futures contract. In this way, if interest rates rose, causing the interest expense to rise, the institution would have an offsetting gain on the futures contract. An institution could also protect the yield on a floating rate asset from declining rates by purchasing an appropriate futures contract which would gain in value as interest rates declined. The value of the hedged asset and liability position is protected by the offsetting gains or losses on the futures position.

Another use of forward and futures contracts is to reduce the duration gap between assets and liabilities. For example, if an institution wanted to increase the duration of its liabilities to more closely match its assets, it could sell futures contracts with longer durations. Conversely, to reduce the duration of its liabilities, the institution could purchase a longer duration futures contract.

Forward and futures contracts can also be used for speculation. If an institution wants to bet that interest rates will decline, it would purchase, for example, 30-year Treasury bond futures contracts instead of purchasing the underlying security outright. Should the interest rate forecast change, the institution can sell the futures contract before delivery must be made. Speculation generally is not an acceptable strategy for insured depository institutions.

Risks of Interest Rate Forward and Futures Contracts

If not properly established and monitored, an interest rate hedge using futures contracts may increase rather than reduce interest rate risk. If the hedge ratio is not calculated properly, for example, the hedged liability or asset could be under or over hedged. Hedge ratios are dynamic, and each hedge must be monitored and adjusted over time to ensure that the hedge ratio remains correct. An improper hedge ratio can directly affect the effectiveness of the hedge in reducing interest rate risk.

Market liquidity may pose risks for hedges using futures and forward contracts. As contract delivery dates go further out in time, the liquidity of these contracts shrinks. This declining liquidity can affect the bank's ability to offset the futures contracts at an optimal price. The forward market is, in general, less liquid than the futures market, and it may be more difficult and costly for an institution to offset a forward position.

Basis risk may also be present in interest rate hedges using futures contracts. It is more likely to be present in cross hedges. The cash price of the instrument underlying the futures contract is only guaranteed to equal the futures price on delivery date. Institutions desiring to close out positions before delivery date must closely monitor the cash/futures basis and consider basis risk before entering into a hedge using futures contracts.

Credit exposure on futures contracts is relatively low due to the clearing corporation structure, the regulatory oversight of the CFTC, and daily margining by futures exchanges. However, counterparty creditworthiness is a major risk of OTC forward contracts. A bank which enters into a transaction to lock in current borrowing rates and protect its net interest margin could see its earnings affected if rates rise and the counterparty defaults. As mentioned, some institutions require collateral from a counterparty before entering into forward transactions. If the counterparty defaults, the sale of the collateral will serve to defray losses which result from the default.

Examination Procedures

Prior to engaging in these transactions, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in futures activities, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and its capacity to fulfill its obligations under these contracts. Trading authority should be

delineated in the policy as well. This authority should be delegated only to individuals who demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to engaging in futures and forward contracts, determination should be made that the particular activity is consistent with the overall asset/liability management strategy of the institution.

A system of periodic reporting to the board of directors, or a duly authorized committee thereof, should be established as part of the bank's monitoring mechanism. These reports should include all futures and forward contract positions and how these reported positions affect the bank's interest rate risk and earnings. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses. (These internal control systems should also monitor the risks associated with the allowable strategies to determine the impact on the bank under different interest rate scenarios.) A bank should also monitor and report the credit risk associated with its forward contracts. The board, or a duly authorized committee thereof, should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures for each counterparty should be combined across all on- and off-balance sheet categories to determine a counterparty's overall credit exposure. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for reserves. Speculation in futures contracts is generally not an appropriate bank activity. However, this type of activity may be acceptable as part of a trading function by a sophisticated institution which has adequate capital, sufficient internal controls and management expertise.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting

journals should, at a minimum, include type (i.e., Eurodollar), nature of position (purchased/sold), underlying instrument, delivery date, current price, purchase/sale price, and amount of initial margin, if applicable. Also, the bank should report positions of futures and forward contracts in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of futures and forward contracts with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review contracts.

VI. INTEREST RATE OPTIONS

Introduction

An interest rate option is an agreement between two parties which gives one party the right, but not the obligation, to buy or sell a security or contract. There are two types of options: call and put options. A call option gives the purchaser, for a fee or premium which is paid to the seller of the call, the right to buy a specific security or contract (underlying instrument) at a specified price (strike price) and a specified date (expiration date). If the call purchaser decides to buy the security (exercise his option), the call seller (writer) must deliver the underlying instrument at the strike price. Conversely, a put option gives the buyer, for a premium, the right to sell the underlying instrument to the put writer at the strike price. There are two types of exercise provisions: American and European. An American option can be exercised at any time up to and including the expiration date. A European option is exercised only on the expiration date.

The relationship between the strike price and the price of the underlying instrument determines whether the option is in-the-money, at-the-money or out-of-the-money. A purchased call option is in-the-money when the market price of the underlying security is above the strike price, and it is out-of-the money when the price of the underlying security is below the strike price. When the relationship between the strike price and the price of the underlying security is reversed, the same terms apply to put options. Both call and put options are at-the-money when

the strike price equals the market price of the underlying instrument.

Over-the-Counter (OTC) Interest Rate Options

Some common OTC interest rate options are options on mortgage and Treasury securities. OTC options do not trade on a centralized exchange, are not standardized contracts, and are not settled through a clearing house. Instead, market makers are typically large investment banks and commercial banks, and contracts are settled directly with the option counterparty. These institutions may also act as intermediaries between offsetting transactions. Brokers facilitate the matching of buyers and sellers in this decentralized market; contract specifications are negotiated between the buyer and seller. Counterparty creditworthiness is a major consideration in transacting OTC options and these options require diligent analysis and monitoring of credit exposure. OTC options are not transferable without the consent of the buyer, making these options less liquid than exchange-traded options.

Exchange-Traded Interest Rate Options

Exchange-traded interest rate options are similar to OTC options with regard to terminology and the basic mechanics. There are a few exchange-traded options where the underlying instrument is a fixed income instrument or index, but most are options on futures contracts or futures options. Some of the most widely traded are options on Eurodollar and Treasury bond futures. Exchange-traded options have a central marketplace, contracts are standardized, and trades are cleared through clearing corporations. The clearing corporation interposes itself between buyers and sellers, acting as a third-party guarantor and eliminating the need for credit analyses on counterparties. Option premiums are determined competitively through an open outcry auction system. This organized, centralized system provides participants with readily available price information. The *Wall Street Journal* provides a futures options section which details the previous day's closing premium prices for various contract expiration months and strike prices, as well as the open interest and contract volume. Open interest is the number of contracts that are outstanding and have not been offset, delivered or exercised. Open interest and volume numbers give participants an indication of the

liquidity in each particular contract. Exchange-traded options benefit from regulatory oversight which is not present in the OTC options market. The Commodity Futures Trading Commission regulates exchange-traded options and futures contracts.

An initial cash deposit, called a margin account, must be established by participants in the futures options market; this type of structures account does not exist in the OTC option markets. For example, when options on futures contracts are sold, the seller must establish a margin account which is commensurate with the position taken. A daily debit or credit is made to the account which corresponds to the price movement of the option. Also, if the account falls below a prescribed level due to position losses, additional funds are required. Failure to comply with margin requirements will lead to the closing out of the position via an offsetting transaction.

A call option on a futures contract gives the purchaser the right to buy the underlying futures contract (take a long futures position). Conversely, a put option gives the purchaser the right to sell the underlying futures contract (take a short futures position). As an alternative to buying or selling a futures contract, the option holder may sell the option or let it expire if it has no value. Call writers stand ready to take a short position in a futures contract, or they may execute a trade offsetting the futures position once the contract is exercised. Put writers stand ready to take a long position in a futures contract or execute an offsetting transaction.

Several factors affect option valuation and are commonly considered when engaging in exchange-traded options: delta, gamma, vega and theta. Delta measures the amount the option premium changes with a one point change in the underlying instrument. Delta value is used in determining how many option contracts are necessary in effective hedging strategies. In this context, the delta value is referred to as the hedge ratio. Gamma is a measure of how much the option's delta will change, for a given change in the price of the underlying instrument. Vega measures how much the option's premium will change for a given change in volatility, and theta measures the amount of premium lost as one day passes.

Uses of Options

Some common interest rate option strategies are writing covered calls and buying protective puts. When an institution writes, or sells, a call option on a held position, the strategy is referred to as covered call writing. This strategy enhances the yield on the position if rates remain stable; provides limited protection, equaling the premium received, when rates rise and prices fall; and diminishes the upside potential if rates decline because the writer is subject to the sale of his position at the agreed upon strike price. In an effort to obtain higher yields, some portfolio managers have mistakenly relied on the theoretical hedging benefits of covered call writing, and have purchased extended maturity U.S. government or Federal agency securities. This practice can significantly increase risks taken by the depository institution by contributing to a maturity mismatch between its assets and its funding.

Another strategy frequently used is buying protective puts. This enables an institution to insulate a particular position from unlimited price declines or increases in interest rates. It entails purchasing a put option on a held position. For example, an institution owns \$25 million of 8%, 30-year Treasury bonds with a book value of 98, and it purchases a European, OTC put option on that security with a strike price of 98 which expires in 3-months. Restated, this institution has purchased the right to sell \$25 million of 8%, 30-year Treasury bonds to the put writer at 98 at the expiration date. If rates rise in the next 3 months and the bond price declines to 92, the institution owns the right to sell the Treasury bonds at 98. If rates decline, the institution can fully participate in the price appreciation of its position, however this is offset slightly by the put premium paid.

Institutions which use duration to manage their balance sheets may use interest rate options to effectively lengthen or shorten assets or liabilities by purchasing calls or puts.

When an institution participates in option contracts which have no connection with its main business, the institution may be engaging in speculation. There are many ways to speculate using interest rate options, one of which is writing naked calls and puts--writing options without ownership of the underlying instrument. This type of activity can pose substantial risk. When a

naked call option is exercised, the writer must purchase the underlying instrument, at then prevailing rates, to deliver to the option buyer. The market price will always be higher than the strike price which the option writer will receive for the instrument. When a naked put option is exercised, the writer must purchase the underlying security at the strike price which will be above the then prevailing market price.

Risks of Interest Rate Options

Counterparty creditworthiness is a major risk of OTC options. An institution holding a protective put with a counterparty who has defaulted is not protected from rising interest rates and has also lost the premium paid for the put. To reduce credit risk, some institutions deal only with highly rated institutions or require that some type of collateral is pledged when the financial condition of the counterparty is unacceptable. This pledged collateral serves to defray any losses in the event of counterparty default.

Options associated with the greatest risk are the naked options described above. However, institutions which purchase puts and write calls on held positions are also subject to interest rate risk. For example, depending on the strike price, a covered call writer will not participate fully in price rallies. If a position is called away, there is the risk that the institution's net interest margin will be reduced because the asset must be replaced at a higher price.

OTC options may be subject to liquidity risk because they are traded in a decentralized market and because these option contracts are not transferable to third parties unless there is consent from both counterparties. Some exchange-traded options written on longer-dated futures contracts are also subject to liquidity risk because there are fewer participants buying and selling those options.

Examination Procedures

Prior to engaging in OTC or exchange-traded options, a bank should consult its state banking authority or obtain the opinion of bank counsel concerning the legality of these activities under state law.

Also prior to participating in OTC or exchange-traded options, a bank should have in

place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals who demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to entering into and throughout the term of any option contract, a determination should be made that the particular activity is consistent with the overall asset/liability position of the institution.

For most banks, option contracts should be used to reduce interest rate exposure. Speculation with option contracts is generally not appropriate for insured depository institutions. More sophisticated institutions which have sufficient management expertise, capital and internal controls may properly use these contracts in a trading or intermediary capacity. Adequate internal controls should exist to insure adherence to the established policies and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all option contract positions and how these reported positions will affect the bank's interest rate exposure and earnings performance. A bank should also monitor and report on the credit risk associated with its OTC option contracts. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all activities with the bank to determine each counterparty's overall credit exposure level. Depending on the level and the counterparty's financial condition, the bank should contemplate the need for reserves from the counterparty or possible deletion from the approved counterparty list.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should, at a minimum, include option type (call/put), nature of position (purchase/sale), description of underlying instrument, exercise (American or European), contractual amount, premium paid, strike rate, and expiration date. Also, the bank should report purchased and written option positions in the Report of Condition, Schedule RC-L.

Documentation of option positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of option contracts with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review contracts.

VII. FORWARD RATE AGREEMENTS

Introduction

A forward rate agreement (FRA) is a contract between two parties in which one party agrees to pay the difference between the market rate of interest on the contract's effective date and a pre-agreed fixed rate or contract rate. A principal or notional amount is used to calculate the payment, but it is never itself exchanged. Typically, the market interest rate in an FRA is the London Interbank Offered Rate (LIBOR). The contracts are quoted according to the beginning and ending dates of the interest period or contract period. For example, a "twos against fives" FRA would have a settlement date or value date two months forward. The contract period would commence at the value date and extend for three months, ending in month five. The first number ("twos") indicates the number of months to the value date, and the second number ("fives") represents the end of the interest period. At the value date, the difference between the market rate

and the contract rate is calculated. If the market rate is above the contract rate, the buyer of the FRA receives a payment. If the market rate is below the contract rate, the seller of the FRA receives a payment. This payment or settlement sum is discounted because the payment is received at the beginning of the contract period rather than at maturity.

FRAs cover only one interest period, usually 3, 6 or 12 months, and this period can be fixed up to 18 months ahead. FRAs are not standardized instruments. No margin account is established, and no premium is paid to either party of the agreement. They are traded in an over-the-counter (OTC) market with market makers primarily being commercial banks.

Uses of Forward Rate Agreements

Suppose a commercial bank wanted to raise money by issuing 3-month CDS, 6 months from now. Believing that interest rates are low and that they will steadily increase, the bank wants to lock in current rates. In order to do this, the bank buys a "sixes against nines" FRA for a notional amount equal to the amount of CDS it will issue. If market rates do, in fact, rise by the value date of the FRA, the contract rate on the FRA would be lower than the prevailing market rate. The bank would then receive a payment from the counterparty which represents the difference between the two rates. This settlement sum would be discounted from the end of the contract period back to the value date. By entering into the FRA six months before issuing the CDS, the bank could lock in low rates while still being able to offer its customers the current market rate on 3-month CDS.

Just as a bank can lock in borrowing costs by buying an FRA, it can also obtain downside protection for its assets by selling FRAs. For example, a bank determines in May, in order to reduce its interest rate gap, that it will originate some short-term variable rate loans which will settle in August and will roll off in November. The bank sells "three against sixes" FRAs to protect the variable rate loans from interest rate declines. By August, interest rates have declined, but the contract rate on the FRA is higher than current market rates. The loan value will decline with lower rates, but the bank will receive a payment for the FRA which will offset the loss on the loan.

As with most off-balance sheet instruments, banks can utilize FRAs to speculate on rate movements. If a bank is an FRA market maker, it can also earn fee income from this activity. Speculation in most cases is not an acceptable strategy for insured depository institutions.

Risks of Forward Rate Agreements

Because FRAs are traded in a decentralized, over-the-counter market, counterparty creditworthiness is a major risk. An institution which has entered into an FRA to protect the return on a floating rate asset or to lock in a borrowing cost, accomplishes neither objective if the counterparty defaults. This could lead to a loss of earnings and reduction of the institution's net interest margin and capital.

Liquidity risk also exists largely due to the decentralized nature of this market and because these contracts are not transferable to third parties unless there is consent from each original counterparty.

Examination Procedures

Prior to engaging in these transactions, an institution should consult its State banking authority or obtain an opinion of counsel concerning the legality of these activities under State law.

Also prior to participating in FRAs, an institution should have in place a written policy approved by the board of directors which details the permissible strategies and agreements of which the institution can engage in and own. The policy should include gross and net limits pertaining to each permissible agreement. Limits should be set by considering the size of the institution and its capital structure. Levels of activity should also be reasonably related to the institution's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals who demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to engaging in any FRAs, a determination should be made that the particular activity is consistent with the overall asset/liability position of the institution.

A system of periodic reporting to the board of directors, or a duly authorized committee thereof, should be established as part of the bank's monitoring mechanism. These reports should include all FRA positions and how these reported positions will affect the bank's interest rate risk and earnings. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses. (These internal control systems should also monitor the risks associated with the allowable strategies to determine the impact on the bank under different interest rate environments.)

Although FRAs are generally short-term in nature, a bank should also monitor and report on the credit risk associated with its FRA positions. The board or a duly elected committee thereof should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures for each counterparty should be combined across all activities with the bank to determine an overall exposure level. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for reserves from the counterparty or possible deletion from the approved counterparty list.

Speculation in FRAs is generally not appropriate for insured depository institutions.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should, at a minimum, include value date, ending date, nature of position (purchase/sale), notional amount, contract rate, and market reference rate. The bank should report FRA positions in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of FRAs with respect to a

particular hedged position or the overall asset/liability position of the bank. Legal counsel should review agreements.

VIII. Long-Term Standby Contracts

The issuance of long-term standby contracts, those for 150 days or more which give the other party to the contract the option to deliver securities to the bank, is ordinarily viewed as an inappropriate practice. In almost all instances where standby contracts specified settlement dates in excess of 150 days, it has been found that such contracts were unrelated to the investment or business needs of the institution, and were primarily for the earning of fee income or speculating on future interest rate movements. Accordingly, insured State nonmember banks should not issue standby contracts specifying delivery in excess of 150 days, unless special circumstances warrant. Any special circumstances should be thoroughly investigated.

IX. Spreading Transactions

Spread trading is comprised of the simultaneous purchase of one futures contract and the sale of another in the expectation that the price relationships between the two will change so that a subsequent offsetting sale and purchase will yield a net profit. Judging that the price change will be greater on one side of the transaction than the other, traders expect the gain on one contract to more than offset the loss on the other. Spreading with futures contracts can be done between different delivery months of the same commodity on the same exchange, between different but related commodities on the same exchange, or between different but related commodities on different exchanges. Various spreading strategies are used by traders to minimize their risk. Spreads are considered less risky than one open buy or sell position as the profit or loss depends on a shift in the price relationship between the two contracts rather than on overall market direction. For example, if a trader thinks that the current price of a June T-Bond futures contract is selling at a premium to a September T-Bond futures contract, the trader will sell a June T-Bond contract and buy a September T-Bond contract. If the prices of the contracts return to their expected price relationships (i.e. the spread between the two

contracts narrows), the trader will liquidate his outstanding positions at a profit.

Although the interagency statement concerning futures, forward and standby contracts provides that these types of contracts are to be entered into to reduce interest rate risk, the three bank regulatory agencies believe that a broader interpretation of this policy statement may be appropriate for a bank's trading account activities. Therefore, spreading transactions are permissible provided they are legal activities under state law and the bank has a written trading activity policy approved by the board of directors which includes authorized position limits and stop loss limits. The bank also should have adequate internal controls and audit procedures and periodically provide the board of directors with reports concerning the status of its futures trading activities.

X. Optioned Equities

The purchase of stocks can be an acceptable investment medium provided the equities are permitted by State law, are of high quality, and there is a well-covered dividend payment record on the part of the issuer. The subject of stock investments should be appropriately addressed as part of the bank's written investment policy with a limitation established on the amount of holdings, and after liquidity objectives have first been covered and long-term financial goals addressed.

Optioned equities are a complex subset of the stock investment area and fraught with danger for the unwary. There are two types of instruments to be considered, "call" and "put" options. A call option is the right to buy a share of stock from the call writer within a given period of time (expiration date) at a stated price (strike or striking price). A put option is the right to sell a share of stock to the put writer within a given period of time at a stated price. As an aid in determining whether the transaction is a call or a put, the nature of the right received from the buyer's viewpoint can be used. In nontechnical language, if the buyer pays an option fee (premium) in order to take something from the seller at an agreed upon price, the option is a call; if the buyer's right is to give something to the seller, the option is a put and a premium (fee) is paid for the right. Options are

traded on national exchanges with call and put information quoted daily as well as amount of the premium.

An investor can sell either a covered call option or an uncovered or "naked" option. In the former, the stock is already owned; in the latter, the stock is not owned. A covered call seller is attempting to maximize the return on the stock by receiving a premium (amount paid by the buyer for selling the call) plus the dividends received on the stock. If bank personnel are thoroughly familiar with the subject of options and specific guidelines have been adopted as part of the bank's written investment policy, this phase of dealing in options can be viewed as an acceptable aspect of investment strategy. It should be remembered that a covered call seller still bears the risk of a decline in the stock price and forgoes a profit if the market price rises above the strike price. Purchasing stock simply to sell options is not an acceptable banking practice; this activity should be restricted to stock already owned as an investment. Selling uncovered or naked options is highly speculative and has no place in a bank's investment program.

Call options are purchased by investors who anticipate a stock will rise in price and the right to purchase at a stated price will become valuable as the market price moves beyond that price. Buying call options is speculative and should be avoided by banks except in limited instances. Such an occasion might arise if the seller of a call decided to cancel the transaction (a closing purchase transaction or buy back) because of a desire to retain the stock and not be obliged to deliver should the market price reach the strike price level. This would require the purchase of a call identical to the one sold in order to offset the latter. It would negate the premium initially received (a premium would have to be paid to acquire the call) and represents a change in the original conservative investment decision of attempting to maximize the total return on the stock owned. Such transactions would have to be viewed on an individual basis as to the reasons therefore. Frequent activity in this area would be a questionable practice. Purchase of a call option would also be necessary if the underlying stock began a decline in value and the bank decided to sell the stock in order to minimize its loss. The purchase of the call would offset the original sale. If this were not done, the bank would find itself in an uncovered position with regard to the original

call option sale, which could be costly if the stock rebounded and rose beyond the strike price prior to expiration.

Premiums (fees) on the sale of covered call options should be deferred and taken into income only after the option has expired, or the buyer has exercised and acquired the stock, or the seller has closed out the option through a buy back.

The purchase of a put option is done for the opposite reason than buying a call. In the latter instance, an investor anticipates the stock price will rise; in buying a put, the investor feels the stock will decline in price. The objective is to acquire the right to sell a certain stock at a stated price and, when the market declines, either buy the stock and sell it at the higher strike price, or sell the put. The premium for a put will increase as the underlying stock falls in price; a call premium will increase as the underlying stock increases in price. Buying puts is, basically, speculative and has no place in a sound bank investment program. There is an exception that might be countenanced in an exceptional circumstance. If a particular stock had risen significantly in value, the investor might decide to buy a put in order to lock in a profit. If the stock began to decline, the put could be exercised and the stock sold. If the market price turned and an advance ensued, the holder would let the put expire and retain the stock. A premium would have been paid in buying the put as a form of hedge or insurance. Buying a put for this limited purpose has its advantages but activity in this area would have to be scrutinized for any abuse or element of speculation. Review of the characteristics of the stock actually owned would be necessary because buying puts is frequently advantageous only for stocks which have high price/earnings ratios, are volatile, and are paying a small dividend or none at all.

Selling a put can be undertaken if the seller is short the stock; this is, of course, speculative in nature. Another case involving speculation is the selling of a put, receipt of a premium, and acquisition of the stock when the strike price is reached. This approach might be prompted in those cases wherein a particular stock is considered desirable but its price is judged too high. The price eventually paid for the stock might be at or near the price originally thought to be too high but, considering the premium earned, the net cost in acquiring the stock could be less.

Like a covered call seller, an investor might sell a put on a quality stock where there is not much volatility with little expectation at the time that the stock will drop in value. Profits are possible, then, on the premium received for selling the put. This is also a speculative area because a drop in the price would make it advantageous for the put buyer to sell stock to the seller of the put at the strike price which would be higher than market.

To summarize, the only area where options could be considered of possible benefit to the bank as an investor is where covered call options are sold, and only those should be written which are listed on national securities exchange and cleared by the Options Clearing Corporation. Buying back a call could be countenanced in only limited instances. Dealing in puts is basically speculative with one possible exception; the buying of a put to lock in a profit on a rising stock. However, the type of stock under consideration and the surrounding circumstances requires scrutiny. Other areas to be considered relative to options are transactions costs and the tax effect. Both would have to be evaluated relative to the bank under examination.

XI. Securities Sales Subject to Put Option

The sale of securities with put options essentially consists of a sale of securities by a bank from its investment portfolio whereby the purchaser(s) receives an irrevocable right to cause, at the purchaser's option, the selling bank to reacquire the securities. The exercise date of the put options is typically a fixed date (or dates) about two to three years after the sale and substantially before the maturity date of the underlying securities. The transaction may be promoted by a securities broker/dealer.

Often, an important objective of the transaction is the temporary transfer of tax-free interest income from a selling bank that cannot benefit from the tax-free attribute to purchasers who can. To obtain this result, the transaction must be classifiable for tax purposes as a sale and purchase rather than a financing transaction. The selling bank may pay for and provide the purchaser with an opinion of a tax expert that the transaction will be a sale/purchase for tax purposes. The Internal Revenue Service, as matter of policy, will not give advance rulings

concerning the tax status of these transactions. Notwithstanding their classification for tax purposes, these transactions, due to the put option, are made with recourse and are therefore reported as borrowings for regulatory purposes.

The exercise price of the put option is usually at or near the par value of the underlying securities whereas the current market value of the securities is usually at a substantial discount below par. The total sales price of the transaction can be determined by discounting the exercise price by a negotiated rate for the period from the sales date to the exercise date.

Selling banks customarily have to deposit collateral with the purchasers or their representative or with third party banks that provide standby letters of credit in order to assure the purchasers that the selling banks will be able to honor their obligations under the put options. Although the purchasers (or the purchasers' representative or the third party letter of credit bank) are at risk for no more than the difference between the exercise price of the put options and the current market value of the underlying securities, the market value of the collateral required to be maintained on deposit by the selling banks may range from an amount equal to this difference to amounts in excess of 100% of the exercise price.

A bank engaging in such transactions bears the following potential risks to its safety and soundness:

- A selling bank may seek to replace its low yielding tax-free assets with higher yielding and higher risk assets;
- A bank can bargain away its liquidity by pledging assets far in excess of any risks taken by other parties to the transaction; and
- A bank can avoid recognizing a loss on a sale simply by attaching a put option, even though the option has no economic value to the purchaser.

XII. Structured Notes

Introduction

U.S. government-sponsored enterprises (GSEs), private corporations, and multilateral development banks have issued structured notes, with the Federal Home Loan Banks the most predominant issuers. These notes are generally issued through medium-term note programs and have customized features that reflect the investment preferences of the investor. The securities typically contain embedded options such as caps, calls, and floors and have cash flows that are linked to indices such as interest rates, foreign exchange rates, commodities prices, prepayment rates, and other financial variables. The cash flows of structured notes can be variable in the timing and amount of cash received by the investor throughout the life of the security, making the evaluation of the cash flows and risks of these securities a difficult process.

Supervisory Guidance

The cash flow uncertainty of structured notes, caused by movements in interest rates, foreign exchange rates, and other indices, may expose banks to greater market risk, liquidity risk, operating risk, or interconnection risk than traditional medium term notes. As a result, bank investments in structured notes warrant increased supervisory attention to ensure that bank management understands the nature of the risks in the securities and has the ability to measure, monitor, and manage these risks.

Characteristics

While there are numerous types of structured notes in the market, there are four common elements that distinguish them from traditional medium-term notes. As stated above, one feature is the existence of embedded options in the notes and the cash flow variability based on different indices. Maturities may range from one year to over ten years. Another common characteristic of structured notes is that, at the time of issuance, the issuer enters into an interest rate swap or other derivatives transactions to offset the risk exposure resulting from the customized features in the note structure. The third and fourth common elements of structured notes are that they offer higher yields than alternative medium-term notes with similar maturities and the issuers have received strong credit ratings. At the time of issuance, structured notes are generally priced at par or at slight discounts to par.

Despite these common elements, the risks in structured notes can vary widely from one security to another. One way to identify these risks is to link the various structures to the different market sectors that determine the cash flow and risk characteristics of the securities. Structured notes can be linked to different market sectors or interest rate scenarios. These include:

1. Increasing or decreasing interest rates,
2. Shape of the U.S. Treasury yield curve,
3. Shape of foreign yield curves,
4. Relationship between two different yield curves,
5. Foreign exchange rates,
6. Equity price movements, and
7. Commodity price movements.

The most common structured notes found in banks are those linked to future interest rate movements and changes in the shape of the U.S. Treasury yield curve. It is these notes that will be the focus of this discussion.

Structured notes with cash flows linked to future interest rate movements are created to maximize the return on the investment based upon an investor's outlook on the direction and level of future interest rates. The cash flows of the notes may fluctuate inversely or directly with interest rate movements. An example of structured notes linked to interest rate movements is an indexed amortizing note (IAN), in which principal is repaid to the investor based upon a predetermined amortization schedule that is linked to the level of a specific interest rate index, such as LIBOR, or to the prepayment rate of a specified pool of mortgage loans or securities. While the investor will ultimately receive the full principal amount by the maturity date, the timing of the receipt of these principal payments is uncertain. The investor receives an above-market rate as compensation for the option the investor has implicitly sold to the issuer (issuer has the option to adjust the principal amortization as interest rates change or, in the case of the prepayment-linked notes, has the right to extend or decrease the maturity of the bond).

Investments that increase the investor's ability to benefit from an increase or decrease in interest rates are leveraged or de-leveraged bonds with coupon rates tied to the increase or decrease in a specified index such as LIBOR, Prime, or the 10-year Constant Maturity Treasury (CMT), such that

the coupon rate may be $1.25 \times \text{LIBOR} + 50$ basis points. In the leveraged bonds, the coupon rate will adjust at a multiple of the change in market rates. In this example, the coupon will adjust 1.25 times the change in LIBOR plus 50 basis points; thus the interest cash flows will be more volatile than unleveraged floating rate instruments tied to LIBOR. A de-leverage bond will have a coupon that adjusts by a fraction of market rates, with a leverage factor of less than one, which will result in coupon rates that lag the movement in market rates, since the change in the coupon rate of the security will be a fraction of the change in market rates.

In addition to securities with cash flows that fluctuate based upon general interest rate movements, there are structured notes designed to benefit from a gradual increase in interest rates over a specified period of time. These securities pay a floating rate coupon based upon an index, (e.g., LIBOR), as long as the index remains within a specified range. The range in which the index may fluctuate may be different for each year in which the security is outstanding. For example, a structured note may bear a coupon rate of six-month LIBOR plus 2.25%, with a three year maturity and semiannual interest payments. The coupon rate will adjust every six months according to the contractual terms as long as six-month LIBOR remains within the following ranges:

Year 1: 0% to 6.25%
Year 2: 0% to 7.25%
Year 3: 0% to 8.25%

If six-month LIBOR falls outside of the ranges, the coupon rate on the note will be 0% for the period that LIBOR exceeds the ranges. In essence, the security becomes a combination of a non-earning asset and a zero-coupon bond during the time LIBOR is outside of the ranges since the interest on the bond is accruing at 0%, however, the investor will receive the principal amount of the bond at maturity. The market value of this bond will be similar to other zero-coupon instruments.

Structured notes can also be created to benefit the investor from yield differentials between different maturities along the yield curve. Often referred to as yield curve anticipation notes and dual index notes, these securities may have coupon rates or principal redemption values linked to two different indices. For example, an

investor may purchase a five-year note with a fixed coupon rate and a principal redemption linked to the difference, or spread, between the yield on the 10-year and 2-year Treasury notes. Depending on the future spread between the two rates, the value of the note at maturity may be higher if the spread decreases, (yield curve flattens) and lower if the spread increases (yield curve steepens), or vice versa. Thus, the note's value at maturity may not be par value. If the note was purchased at par or at a premium, there is a risk that the investor may lose some principal in this investment.

A list of common structures, including those described above, can be found in the Appendix at the end of this Section.

RISKS AND EXAMINATION GUIDANCE

Market Risk

Market risk is defined as the risk of loss of value in an instrument due to changes in price, an index of financial instruments, or various interest rates. Banks generally invest in securities based upon an assumption of future interest rate levels. However, structured notes expose banks to greater market risk, in the form of price volatility, due to the presence of embedded options and/or leverage factors in the bonds. The uncertainty associated with the timing and/or amount of cash flow exhibited in structured notes may result in greater price volatility than is exhibited by securities with stable cash flows. In general, structured notes with higher leverage factors and longer maturities will have more price volatility.

The price volatility of structured notes with cash flows linked to yield differentials between two indices may be more volatile than those linked to single indices. They are especially sensitive to non-parallel shifts in the yield curve since the notes have yields or principal redemption values linked to the difference between short-term and long-term rates.

Cash flow uncertainty caused by interest rate movements may result in negative returns on a bank's investment in the event that funding costs exceed the yield earned on the structured note. The yield an investor ultimately earns on a structured note investment may be dramatically lower than expectations due to interest rate movements or other financial variables.

Examination Guidance - Market Risk

At a minimum, banks should have the ability to determine the change in the market value of their structured notes prior to and subsequent to purchase given a reasonable range of changes in interest rates (e.g., ± 300 basis points), on a quarterly basis. Securities with price volatility greater than 17%, given a ± 300 basis point interest rate change, should be evaluated monthly. The price sensitivity of structured notes with cash flows linked to yield differentials should be evaluated given a flattening and a steepening of the yield curve. Limits regarding the amount of price volatility acceptable for structured notes should be established in the bank's policies.

Methodologies used to determine market values should be capable of pricing the embedded options in the bonds. Thus, factors that affect the value of options, such as implied volatility, should be considered in the pricing of structured notes. All analyses and assumptions should be well-documented by management and available for review by examiners.

In appropriate circumstances, examiners should seek the orderly divestiture of these securities. Bank management that does not demonstrate an understanding of the factors that influence the market value of structured notes, (e.g., the relationship between implied forward interest rates and price), and does not have the ability to measure, monitor, and manage the market risk, could be deemed to be engaged in an unsafe and unsound practice, relative to their investment in structured notes, and should be requested to take appropriate corrective action.

Structured notes that explicitly, by their terms, expose a bank to risk of loss of principal or their original investment are unsuitable and the market value of these securities should be classified Substandard and the depreciation (up to the maximum potential principal loss at maturity) should be classified Loss. Structured notes that do not expose the bank to risk of loss of book value should be listed for Special Mention in the Report of Examination if management cannot demonstrate or provide adequate documentation to substantiate sufficient knowledge of the risks inherent in these investments, as well as their effects on the interest rate risk exposure and overall financial condition of the bank.

Securities with characteristics similar to those of high-risk mortgage securities will be subject to the same supervisory treatment as high-risk mortgage securities. Thus, mortgage prepayment-linked securities will be subject to the provisions of Section III of the Policy Statement on Securities Activities.

Liquidity Risk

Liquidity risk is the risk that an instrument cannot be closed out, or disposed of rapidly, at, or very close to, economic value. Because structured notes are tailored products intended to meet the investment objectives of specific investors, they are thinly traded, and thus there is not always an active secondary market for these securities. Due to lack of an active secondary market and the complexity of the securities, few pricing services and broker/dealers are able to price these securities.

An indication of the amount of liquidity is the spread between the bid and the offer (the bid/offer spread) price of a security. Generally, structured notes have wider bid/offer spreads than comparable maturity medium-term notes. Securities with coupon rates or principal redemption schedules linked to yield differentials, or to less liquid financial instruments, are difficult to value and their bid/offer spreads may be considerable wider than other structured notes.

Examination Guidance - Liquidity Risk

The lack of liquidity in the structured note market does not absolve bank management of their responsibility to monitor the market value and liquidity of these investments. It is recommended that at the time of purchase, bank management should identify sources that can provide periodic market values subsequent to purchase. Limits on investments in thinly-traded structured notes should also be established. Well-documented bid and offer prices from several sources, obtained at least quarterly, should be available for examiner review. The bid/offer spreads may provide examiners with a indication of the liquidity in the market as well as the market value of the investment. The liquidity risk associated with structured note investments should be considered in the evaluation of the bank's liquidity positions, and internal liquidity and funds management policies.

Operating Risk

Operating risk is the risk of loss due to inadequate policies, procedures and internal controls, human error, inadequate monitoring and reporting systems, or fraud. Due to the price volatility and lack of liquidity in structured notes, inadequate management of investments in structured notes may result in unexpected losses.

Examination Guidance - Operating Risk

Banks that invest in structured notes should have effective senior management supervision and oversight by the board of directors to ensure that the investment activities are conducted in a safe and sound manner. It is imperative that bank management have written specific policies and procedures regarding the investment in structured notes. At a minimum, policies and procedures should address (1) managerial oversight and responsibilities, (2) risk limits, (3) reporting requirements, (4) investment strategies, (5) procedures to measure and monitor risks, and (6) internal controls. Examiners should review strategies for consistency with overall business and risk management strategies.

Periodic reports should demonstrate how the investment in structured notes is applied to achieve strategic portfolio and/or interest rate risk management objectives. An evaluation of the effectiveness of investment strategies should be completed at least quarterly. All assumptions used in these evaluations should be documented and available for examiner review.

Inter-connection Risk

Inter-connection risk may be heightened in structured notes due to their cash flow linkage to market indices and to other market sectors. The inter-connection risk in structured notes is best described by an example in which either the cash flows or the value of a note is affected by changes in the level of German interest rates and U.S. interest rates. Generally, structured notes with cash flows linked to foreign interest rates, currency rates, equity, or commodities prices will have greater interconnection risk than other structured notes. As a result, these notes may have more market liquidity risks.

Examination Guidance - Inter-connection Risk

To effectively measure and monitor inter-connection risk, banks should have systems that are capable of evaluating the effect of price movements in different market sectors and movements in foreign interest rates on the cash flows and market values of structured notes. Bank management should demonstrate an understanding of the trends and behavior of market sectors that will directly affect the value of their structured notes holdings.

Conclusion

The structured notes described in this section are provided to illustrate the risks in these securities. There are a variety of these types of securities and it is important to consider the cash flow characteristics of the notes when identifying and determining their risks. Due to the price volatility and lack of liquidity of structured notes, it may be considered an unsafe and unsound practice to invest in these securities without the knowledge and ability to measure, monitor, and manage the risks. Banks that engage in such practice will be requested to take appropriate corrective action that may include a request to divest if holdings are material.

Deficiencies found in the evaluation and management of risks in structured notes should be fully addressed in the Report of Examination. The risks found in structured notes can adversely impact all areas of a bank's financial condition, and as a result, examiners should, at a minimum, evaluate these investments given full consideration to a bank's capital adequacy, asset quality, present and future earnings performance, interest rate risk exposure, and liquidity and funds management positions. Deficiencies in management's knowledge, internal policy guidelines, documentation, management information systems, and measurement and monitoring systems should also be appropriately addressed in the evaluation of management and board supervision. Report comments should also reflect situations where investments in structured notes are not consistent with a bank's overall strategic planning objectives and guidelines.

APPENDIX

A Description of the more common structured notes is listed below. Note that this list is not all inclusive.

Step-up Bonds. Step-up securities initially pay the investor an above-market yield for a short noncall period and then, if not called, "step up" to a higher coupon rate (which will be below current market rates). The investor initially receives a higher yield because of having implicitly sold a call option. A multistep bond has a series of fixed and successively higher coupons over its life. At each call date, if the bond is not called, the coupon rate increases.

Index Amortizing Notes (IANs). IANs repay principal according to a predetermined amortization schedule that is linked to the level of a specific index (usually the London Interbank Offered Rate - LIBOR - or a specified prepayment rate). As market interest rates increase (or prepayment rates decrease), the maturity of an IAN extends, similar to that of a collateralized mortgage obligation.

Dual Index Notes. These bonds have coupon rates that are determined by the difference between two market indices, typically the Constant Maturity Treasury rate (CMT) and LIBOR. These bonds often have a fixed rate for two years, then 10-year CMT + 300 basis points - three-month LIBOR.

De-leveraged Bonds. These bonds pay investors according to a formula that is based upon a fraction of the increase or decrease in a specified index, such as CMT or the prime rate. For example, the coupon might be 0.5×10 year CMT + 150 basis points. The deleveraging multiplier (0.5) causes the coupon to lag overall movements in market yields. A leveraged bond would involve a multiplier greater than 1.

Range Bonds. Range bonds (or accrual bonds) pay the investor an above-market coupon rate as long as the reference rate is between levels established at issue. For each day that the reference rate is outside this range, the bonds earn no interest. For example, if LIBOR is the reference rate, a bond might pay LIBOR + 75 basis points for each day that LIBOR is between 3.5 percent and 5.0 percent. When LIBOR is less than 3.5 percent or more than 5 percent, the bond would accrue no interest.

Inverse Floaters. These bonds have coupons that increase as rates decline and decrease as rates rise. The coupon is based upon a formula, such as 12 percent minus three-month LIBOR.